

Claims as Currently Amended

Please cancel without prejudice claims 1, 2, 9, 10, 12-32, 39-40, 42-46, 49-51, and 53-54.

Please amend claims 3-5, 8, 11, 33-35, 38, 41, 47-48, and 52 as follows:

Please add claims 55-63 as follows:

1. (Canceled)
2. (Canceled)

3. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for stimulating tissue within a patient's body and said implantable device is contained within a sealed elongate housing having an axial dimension of less than 60 mm and a lateral dimension of less than 6 mm, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field;

a handheld programmer configured to be located external to the patient's body and containing a permanent magnet within, wherein the patient can apply and remove a magnetic field according to an identifiable timing sequence by bringing said handheld programmer in proximity and removing it from proximity of the implantable device at one or more locations external to the patient's body; and wherein

The system of claim 2 wherein said handheld programmer additionally comprises a selector for altering the distance-position of said permanent magnet within the programmer to from the patient's body and thereby correspondingly alter the strength of said externally applied magnetic field to which the implantable device is exposed when the handheld programmer is positioned in proximity to the implantable device.

4. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for stimulating tissue within a patient's body and said implantable device is contained within a sealed elongate housing having an axial dimension of less than 60 mm and a lateral dimension of less than 6 mm, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field;

a handheld programmer configured to be located external to the patient's body and containing a permanent magnet within, wherein the patient can apply and remove a magnetic field according to an identifiable timing sequence by bringing said handheld programmer in proximity and removing it from proximity of the implantable device at one or more locations external to the patient's body; and wherein

The system of claim 2 wherein said handheld programmer has a first surface for presenting a magnetic field of a first polarity and a second surface for presenting a magnetic field of a second polarity, opposite of said first polarity.

5. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for stimulating tissue within a patient's body and said implantable device is contained within a sealed elongate housing having an axial dimension of less than 60 mm and a lateral dimension of less than 6 mm, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field;

~~The system of claim 1 additionally comprising:~~

a handheld programmer configured to be located external to the patient's body and containing a permanent magnet within; and

a mechanism, configured for activation by the patient, within said handheld programmer configured to provide an identifiable timing sequence of the application and removal of a magnetic field.

6. (Original) The system of claim 5 wherein said mechanism is spring powered.

7. (Original) The system of claim 5 wherein said mechanism is electro-mechanically powered.

8. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for stimulating tissue within a patient's body and said implantable device is contained within a sealed elongate housing having an axial dimension of less than 60 mm and a lateral dimension of less than 6 mm, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field;

~~The system of claim 1 additionally comprising:~~

a handheld programmer configured to be located external to the patient's body;

a coil within said handheld programmer suitable for generating a magnetic field when energized;

driver circuitry within said handheld programmer for energizing said coil;

a handheld programmer controller within said handheld programmer for generating a sequence of magnetic fields; and

a power source for powering said handheld programmer.

9. (Canceled)

10. (Canceled)

11. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for stimulating tissue within a patient's body and said implantable device is contained within a sealed elongate housing having an axial dimension of less than 60 mm and a lateral dimension of less than 6 mm, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field; and wherein

~~The system of claim 1 wherein~~ said sensor dissipates power when sensing a magnetic field and said implantable device additionally comprises circuitry for periodically applying and removing power from said sensor and sampling said sensor during time periods corresponding to when said power is applied.

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (Canceled)

30. (Canceled)

31. (Canceled)

32. (Canceled)

33. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for modifying and/or sensing a patient's body parameter, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field;

a handheld programmer configured to be located external to the patient's body and containing a permanent magnet within, wherein the patient can apply and remove a magnetic field according to an identifiable timing sequence by bringing said handheld programmer in proximity and removing it from proximity of the implantable device at one or more locations external to the patient's body; and wherein

The system of claim 32 wherein said handheld programmer additionally comprises a selector for altering the distance position of said permanent magnet from the patient's body and within the programmer to thereby altering correspondingly alter the strength of said externally applied magnetic field to which the implantable device is exposed when the handheld programmer is positioned in proximity to the implantable device.

34. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for modifying and/or sensing a patient's body parameter, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field;

a handheld programmer configured to be located external to the patient's body and containing a permanent magnet within, wherein the patient can apply and remove a magnetic field according to an identifiable timing sequence by bringing said handheld programmer in proximity and removing it from proximity of the implantable device at one or more locations external to the patient's body; and wherein

~~The system of claim 32 wherein~~ said handheld programmer has a first surface for presenting a magnetic field of a first polarity and a second surface for presenting a magnetic field of a second polarity, opposite of said first polarity.

35. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for modifying and/or sensing a patient's body parameter, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field;

~~The system of claim 31 additionally comprising:~~

a handheld programmer configured to be located external to the patient's body and containing a permanent magnet within; and

a mechanism, configured for activation by the patient, within said handheld programmer configured to provide an identifiable timing sequence of the application and removal of a magnetic field.

36. (Original) The system of claim 35 wherein said mechanism is spring powered.

37. (Original) The system of claim 35 wherein said mechanism is electro-mechanically powered.

38. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for modifying and/or sensing a patient's body parameter, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field;

~~The system of claim 31 additionally comprising:~~

a handheld programmer configured to be located external to the patient's body;

a coil within said handheld programmer suitable for generating a magnetic field when energized;

driver circuitry within said handheld programmer for energizing said coil;

a handheld programmer controller within said handheld programmer for generating a sequence of magnetic fields; and

a power source for powering said handheld programmer.

39. (Canceled)

40. (Canceled)

41. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for modifying and/or sensing a patient's body parameter, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field; and wherein

~~The system of claim 31 wherein~~ said sensor dissipates power when sensing a magnetic field and said implantable device additionally comprises circuitry for periodically applying and removing power from said sensor and sampling said sensor during time periods corresponding to when said power is applied.

42. (Canceled)

43. (Canceled)

44. (Canceled)

45. (Canceled)

46. (Canceled)

47. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for modifying and/or sensing a patient's body parameter, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field; and wherein

The system of claim 31 wherein said implantable device has at least one programmable parameter having an adjustment range prescribed according to settings provided from an external programmer and wherein said controller's ability to alter said at least one programmable parameter is restricted to said prescribed adjustment range.

48. (Currently Amended) A system for programming one or more parameters in an implantable device, wherein said implantable device is configured for modifying and/or sensing a patient's body parameter, said system comprising:

a sensor within said implantable device sensitive to the presence of an externally applied magnetic field;

a controller within said implantable device coupled to said sensor for monitoring the presence of said externally applied magnetic field and determining a timing sequence for the application and removal of said externally provided magnetic field, wherein said controller is configured to alter at least one programmable parameter of said implantable device in response to detection of an identifiable timing sequence of the application and removal of said externally provided magnetic field; and wherein

The system of claim 31 wherein said implantable device has a plurality of programmable parameters and wherein a set of said programmable parameters are selected according to settings provided from an external programmer and wherein said controller's ability to alter said programmable parameters is restricted according to said selected set of programmable parameters.

49. (Canceled)

50. (Canceled)

51. (Canceled)

52. (Currently Amended) A handheld programmer for programming one or more parameters in an implantable device, wherein the implantable device is configured for modifying and/or sensing a body parameter of a patient, said handheld programmer comprising:

a magnetic field source, wherein said magnetic field source is a permanent magnet;

a housing for holding said magnetic field source; wherein said housing is configured for application to and removal from a portion of the patient's body and to enabling presenting and removing a magnetic field from said magnetic field source to the implantable device and thereby alter at least one programmable parameter of the implantable device; and

~~The handheld programmer of claim 50 additionally comprising at least one mechanism for altering the distance-position of said permanent magnet from relative to the patient's body and thereby present altered intensities of the corresponding magnetic field to the implantable device and to thus alter at least one programmable parameter of the implantable device accordingly.~~

53. (Canceled)

54. (Canceled)

55. (New) The system of claim 3 wherein said selector for altering the position of said permanent magnet comprises:

a first handheld programmer portion having a cylindrical shape, an outer thread, and containing said permanent magnet; and

a second handheld programmer portion having an inner threaded cavity wherein said inner thread cavity is formed to receive said outer thread of said first handheld programmer portion and whereby screwing said first handheld portion into said second handheld programmer portion alters the position of said permanent magnet relative to said second handheld programmer portion.

56. (New) The system of claim 55 wherein said selector additionally comprises a ball detent mechanism cooperatively positioned on said first and second handheld programmer portions to fixedly position said permanent magnet relative to said second handheld programmer portion in one of a plurality of predefined positions.

57. (New) The system of claim 3 wherein said selector for altering the position of said permanent magnet comprises:

a first handheld programmer portion having a square shape and containing said permanent magnet;

a second handheld programmer portion having an inner cavity wherein said inner thread cavity is formed to receive said first handheld programmer portion; and

a detent mechanism for altering the position of said permanent magnet relative to said second handheld programmer portion in one of a plurality of predefined positions.

58. (New) The system of claim 33 wherein said selector for altering the position of said permanent magnet comprises:

a first handheld programmer portion having a cylindrical shape, an outer thread, and containing said permanent magnet; and

a second handheld programmer portion having an inner threaded cavity wherein said inner thread cavity is formed to receive said outer thread of said first handheld programmer portion and whereby screwing said first handheld portion into said second handheld programmer portion alters the position of said permanent magnet relative to said second handheld programmer portion.

59. (New) The system of claim 58 wherein said selector additionally comprises a ball detent mechanism cooperatively positioned on said first and second handheld programmer portions to fixedly position said permanent magnet relative to said second handheld programmer portion in one of a plurality of predefined positions.

60. (New) The system of claim 33 wherein said selector for altering the position of said permanent magnet comprises:

a first handheld programmer portion having a square shape and containing said permanent magnet;

a second handheld programmer portion having an inner cavity wherein said inner thread cavity is formed to receive said first handheld programmer portion; and

a detent mechanism for altering the position of said permanent magnet relative to said second handheld programmer portion in one of a plurality of predefined positions.

61. (New) The handheld programmer of claim 52 wherein said at least one mechanism for altering the position of said permanent magnet comprises:

a first handheld programmer portion having a cylindrical shape, an outer thread, and containing said permanent magnet; and

a second handheld programmer portion having an inner threaded cavity wherein said inner thread cavity is formed to receive said outer thread of said first handheld programmer portion and whereby screwing said first handheld portion into said second handheld programmer portion alters the position of said permanent magnet relative to said second handheld programmer portion.

62. (New) The handheld programmer of claim 61 wherein said selector additionally comprises a ball detent mechanism cooperatively positioned on said first and second handheld programmer portions to fixedly position said permanent magnet relative to said second handheld programmer portion in one of a plurality of predefined positions.

63. (New) The handheld programmer of claim 52 wherein said selector for altering the position of said permanent magnet comprises:

a first handheld programmer portion having a square shape and containing said permanent magnet;

a second handheld programmer portion having an inner cavity wherein said inner thread cavity is formed to receive said first handheld programmer portion; and

a detent mechanism for altering the position of said permanent magnet relative to said second handheld programmer portion in one of a plurality of predefined positions.